

REMARKS

In the December 18, 2009 Office Action, all of claims 1-7 and 9-19 stand rejected in view of prior art. No other objections or rejections were made in the Office Action.

Status of Claims and Amendments

In response to the December 18, 2009 Office Action, Applicants have amended claims 1, 2, 4, 5, 10, 11, 14 and 15 as indicated above. Thus, claims 1-7 and 9-19 are still pending, with claim 1 being the only independent claim. Reexamination and reconsideration of the pending claims are respectfully requested in view of above amendments and the following comments.

Rejections - 35 U.S.C. § 103

On pages 2-6 of the Office Action,

- (A) Claims 1-5, 8¹, 10, 11, 14 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,462,817 (Hsu et al.) in view of Japanese Patent Publication No. 2003-059521 (Yoichi et al.); and
- (B) Claims 6, 7, 12, 13, 16, 17, 18 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the Hsu et al. patent in view of the Yoichi et al. publication and further as modified by U.S. Patent Application Publication No. 2004/0062961 (Sato et al.).

In response, Applicants have amended independent claim 1 as mentioned above to more clearly define the present invention over the prior art of record. This rejection is respectfully traversed, especially in view of the amendments to independent claim 1.

¹ Claim 8 is a cancelled claim. However, Claim 9 is address at the top of page 4 of the Office Action. Thus, Applicants are treating claim 9 as being rejected in this section of the Office Action

In particular, independent claim 1 now requires,

a cell module including a cell stack that generates electricity from a fuel gas and an oxygen-containing gas, and a burning section that contacts and burns remaining fuel gas and oxygen-containing gas from said cell stack;

a heat recovery path disposed around said cell module that recovers heat loss from said cell module;

a heat exchanger that exchanges heat using burned waste gas from said cell module;

and

a branch flow rate regulating part that branches supplied fluid to said cell stack, said supplied fluid being one of the fuel gas and the oxygen-containing gas, and said branch flow regulating part supplying said supplied fluid to

a first flow path that supplies said supplied fluid from said branch flow regulating part to said cell stack through said heat exchanger, and

a second branch flow path that supplies said supplied fluid from said branch flow regulating part to said heat recovery path, said heat recovery path being connected to said cell stack to supply said supplied fluid from said second branch flow path to said cell stack after recovering heat loss from said cell module,

said branch flow regulating part regulating a flow rate of said supplied fluid into said second branch flow path. Clearly this arrangement is **not** disclosed or suggested by the Hsu et al. patent, the Yoichi et al. '521 publication and/or the Sato et al. '961 publication, singularly or in combination as explained below.

In contrast, since the bypass line 18 (Figure 8) in the Yoichi et al. '521 publication does not supply the supplied fluid to the cell stack through the heat exchanger, and thus, does not disclose the first flow path as now set forth in independent claim 1.

Furthermore, the Office Action recognized that a recuperator 9 in the Yoichi et al. '521 publication would correspond to the claimed heat recovery path, and that the bypass path 18 is a path branched from the heat recovery path. See page 3, lines 6-10 of the Office Action. However, since independent claim 1 now indicates that the heat recovery path is disposed around the cell stack, the recuperator 9 in the Yoichi et al. '521 publication cannot correspond to the claims heat recovery path set forth in independent claim 1.

The Office Action acknowledges that “Hsu does not explicitly teach a branching part”, but relies on the Yoichi et al. ‘521 publication to teach “a SOFC (Solid Oxide Fuel Cell) wherein a bypass line (18) may be used when the temperature of the oxidizing agent heated by the recuperator (9) is higher than the temperature which the SOFC needs, said bypass line (18) can lower the temperature of the oxidizing agent (see figure 8 and paragraph 63).” However, neither the bypass line (18) nor the main line of the oxidizer (10) of the Yoichi et al. ‘521 publication supplies said supplied fluid from said branch flow regulating part to said heat recovery path, said heat recovery path being connected to said cell stack to supply said supplied fluid from said second branch flow path to said cell stack after recovering heat loss from said cell module, wherein the heat recovery path is disposed around said cell module that recovers heat loss from said cell module, as explained above. In other words, the Yoichi et al. ‘521 publication does not disclose or suggest heat exchange occurring between a fluid supplied to the fuel cell stack and the fuel cell stack itself prior to the supplied fluid being supplied to the cell stack.

Also, the Hsu et al. patent describes including *two separated loops (a fuel cell loop and another loop) with heat exchange taking place therebetween*. Specifically, the Hsu et al. patent describes that another loop includes a working medium Mc for turbine bottoming cycle (see the Hsu et al. patent at column 8, last paragraph). The Hsu et al. patent does not describe that the working medium Mc is also sent through the fuel cell loop. Rather, judging from the fact that the fuel cell loop performs heat exchange between the incoming reactants (fuel 17, air 19) and the exhaust stream 18 to be exhausted (see the Hsu et al. patent at column 8, lines 40-53), it appears that *the working medium Mc for turbine bottoming cycle is not sent through the fuel cell loop*. In other words, *the Hsu et al. patent teaches away from the modification suggested in the Office Action because a common working medium is not sent through the two loops in the Hsu et al. patent*. In other words, the Hsu et al. patent does not disclose or suggest heat exchange occurring between a fluid supplied to the fuel cell stack and the fuel cell stack itself prior to the supplied fluid being supplied to the cell stack.

Therefore, neither reference discloses or suggests a heat recovery path disposed around said cell module that recovers heat loss from said cell module;

a heat exchanger that exchanges heat using burned waste gas from said cell module;
and

a branch flow rate regulating part that branches supplied fluid to said cell stack, said supplied fluid being one of the fuel gas and the oxygen-containing gas, and said branch flow regulating part supplying said supplied fluid to

a first flow path that supplies said supplied fluid from said branch flow regulating part to said cell stack through said heat exchanger, and
a second branch flow path that supplies said supplied fluid from said branch flow regulating part to said heat recovery path, said heat recovery path being connected to said cell stack to supply said supplied fluid from said second branch flow path to said cell stack after recovering heat loss from said cell module,

said branch flow regulating part regulating a flow rate of said supplied fluid into said second branch flow path, as now clearly required by independent claim 1.

Accordingly, a hypothetical combination of the Hsu et al. patent and the Yoichi et al. '521 publication cannot disclose this arrangement set forth in independent claim 1.

The Sato et al. '961 publication fails to account for the deficiencies of the Hsu et al. patent and the Yoichi et al. '521 publication with respect to independent claim 1. In fact the Office Action merely alleges that the Sato et al. publication discloses a vaporizer, and does not assert that the Sato et al. '961 publication discloses a branch flow rate regulating part branching supplied fluid to first and second flow paths as now claimed.

Under U.S. patent law, the mere fact that the prior art can be modified does *not* make the modification obvious, unless an *apparent reason* exists based on evidence in the record or scientific reasoning for one of ordinary skill in the art to make the modification. See, KSR Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727, 1741 (2007). The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed." Id. at 1741. In this case, even if combined as suggested in the Office Action, the cited references lack the arrangement now set forth in independent claim 1. Moreover, the current record as well as the general knowledge in the art lacks any apparent reason, suggestion or expectation

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of success for modifying the hypothetical structure that would be created by the hypothetical combination to result a branch flow rate regulating part branching supplied fluid to first and second flow paths as now required by independent claim 1.

Moreover, Applicants believe that dependent claims 2-7 and 9-19 are also allowable over the prior art of record in that they depend from independent claim 1, and therefore are allowable for the reasons stated above. Also, dependent claims 2-7 and 9-19 are further allowable because they include additional limitations, which in combination with the features of independent claim 1, are not disclosed or suggested in the prior art of record. Accordingly, Applicants also respectfully request withdrawal of the rejections of dependent claims 2-7 and 9-19.

* * *

In view of the foregoing amendment and comments, Applicants respectfully assert that claims 1-7 and 9-19 are now in condition for allowance. Reexamination and reconsideration of the pending claims are respectfully requested. If there are any questions regarding this Amendment, please feel free to contact the undersigned.

Respectfully submitted,

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